## IN THE CLAIMS

Please amend claims 1, 10 and 11, and add new claims 17-24 as follows:

- (CURRENTLY AMENDED) A method for forming a nitride semiconductor device, comprising:
- (a) growing one or more non-polar a-plane gallium nitride (GaN) template layers on [[an r-plane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and
- (b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers <u>directly</u> off of [[a]] <u>the</u> grown surface of the non-polar a-plane GaN template layers to form at least one non-polar a-plane quantum well.
  - 2. (CANCELED)
  - 3. (CANCELED)
  - 4. (CANCELED)
  - 5. (CANCELED)
  - 6. (ORIGINAL) The method of claim 1, wherein the substrate is a sapphire substrate.
  - 7. (ORIGINAL) The method of claim 1, wherein the growing step (a) comprises:
  - (1) annealing the substrate;
  - (2) depositing a nitride-based nucleation layer on the substrate;
  - (3) growing the GaN layer on the nucleation layer; and
  - (4) cooling the GaN under a nitrogen overpressure.
- 8. (ORIGINAL) The method of claim 1, wherein the growing steps are performed by a method selected from a group comprising metalorganic chemical vapor deposition (MOCVD), molecular beam epitaxy (MBE), liquid phase epitaxy (LPE), hydride vapor phase epitaxy (HVPE), sublimation, and plasma-enhanced chemical vapor deposition (PECVD).

- 9. (ORIGINAL) A device manufactured using the method of claim 1.
- 10. (CURRENTLY AMENDED) A nitride semiconductor device comprising one or more non-polar a-plane gallium nitride (GaN) template layers grown on an r-plane substrate, and one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of a grown surface of the non-polar a-plane GaN template layers, wherein the nitride semiconductor device is created using a process comprising:
- (a) growing one or more non-polar a-plane gallium nitride (GaN) template layers on [[an r-plane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and
- (b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers off of [[a]] the grown surface of the non-polar a-plane GaN template layers to form at least one non-polar a-plane quantum well.
  - 11. (CURRENTLY AMENDED) A nitride semiconductor device, comprising:
- (a) one or more non-polar a-plane gallium nitride (GaN) template layers grown on [[an rplane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and
- (b) one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of [[a]] the grown surface of the non-polar a-plane GaN template layers.
- 12. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well ranges in width from approximately 20 Å to approximately 70 Å.
- 13. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well has a doped barrier.
- (PREVIOUSLY PRESENTED) The method of claim 13, wherein the doped barrier is doped with silicon.

- 15. (PREVIOUSLY PRESENTED) The method of claim 14, wherein the doped barrier is doped with silicon with a dopant concentration of  $2\times10^{18}$  cm<sup>3</sup>.
- (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well is an GaN/AlGaN quantum well.
- 17. (NEW) The method of claim 1, wherein the non-polar a-plane quantum well ranges in width from more than 40 Å to approximately 70 Å in order to optimize emission intensity from the non-polar a-plane quantum well.
- 18. (NEW) The method of claim 2, wherein a maximum emission intensity from the non-polar a-plane quantum well is associated with a non-polar a-plane quantum well width of approximately 50 Å.
- 19. (NEW) The method of claim 3, wherein the non-polar a-plane quantum well has an optimal width of 52 Å.
  - 20. (NEW) The method of claim 1, wherein the substrate is an r-plane substrate.
- 21. (NEW) The method of claim 1, wherein the quantum well width required for optimal non-polar quantum well emission is larger than for polar quantum wells.
- 22. (NEW) The method of claim 1, wherein a maximum emission intensity is associated with a thicker quantum well width for the non-polar a-plane quantum well as compared to a polar c-plane quantum well.
- 23. (NEW) The method of claim 1, wherein a quantum well width of the non-polar a-plane quantum well is thicker as compared to a quantum well width of a polar c-plane quantum well, for their respective emission intensities.

24. (NEW) The method of claim 1, wherein an optimal well width of the non-polar a-plane quantum well is determined primarily by material quality, interface roughness, and excitonic Bohr radius.